

### SMD- Top View LEDs

### 2121-GSRQHBOD-A025025025-3T8-CS(SL)



#### Features

- P-LCC-4 package.
- Inner reflector and white package.
- Optical indicator.
- Soldering methods: IR reflow soldering.
- Computable with automatic placement equipment.
- Pb-free.
- The product itself will remain within RoHS compliant version.
- Compliance with EU REACH.
- Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm).
- Precondition: Bases on JEDEC J-STD 020D Level 3

#### Applications

- Switches, symbol, mobile phone, digital camera and illuminated advertising.
- Display for indoor and outdoor application.
- Ideal for coupling into light guides.
- Substitution of traditional light.
- Amusement equipment.
- General applications.
- Optical indicator.

### Device Selection Guide

Type	Chip Materials	Emitted Color	Resin Color
RQH	AlGaInP	Brilliant Red	Diffused
GS	InGaN	Brilliant Green	Diffused
BO	InGaN	Brilliant Blue	Diffused

### Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Type	Rating	Unit
Forward Current	I <sub>F</sub>	RQH	30	mA
		GS	30	
		BO	30	
Peak Forward Current (Duty 1/10 @1KHz)	I <sub>FP</sub>	---	60	mA
Power Dissipation	P <sub>d</sub>	RQH	66	mW
		GS	87	
		BO	87	
Junction Temperature	T <sub>j</sub>	---	115	°C
Operating Temperature	T <sub>opr</sub>	---	-40 ~ +85	°C
Storage Temperature	T <sub>stg</sub>	---	-40 ~ +90	°C
ESD	ESD	RQH	2000	V
		GS/BO	1000	V
Soldering Temperature	T <sub>sol</sub>	Reflow Soldering : 260 °C for 10 sec. Hand Soldering : 350 °C for 3 sec.		

**Electro-Optical Characteristics (Ta=25°C)**

Parameter	Symbol	Type	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	Iv	RQH	75	---	130	mcd	
		GS	285	---	495		
		BO	55	---	97		
Viewing Angle	2θ <sub>1/2</sub>		---	120	---	deg	
Peak Wavelength	λp	RQH	---	630	---	nm	
		GS	---	530	---		
		BO	---	470	---		
Dominant Wavelength	λd	RQH	617	---	626	nm	R:I <sub>F</sub> =2.5mA G:I <sub>F</sub> =2.5mA B:I <sub>F</sub> =2.5mA
		GS	526	---	535		
		BO	469	---	478		
Spectrum Radiation Bandwidth	Δλ	RQH	---	13.5	---	nm	
		GS	---	25	---		
		BO	---	18	---		
Forward Voltage	V <sub>F</sub>	RQH	1.30	---	2.20	V	
		GS	2.10	---	2.90		
		BO	2.10	---	2.90		
Reverse Current	I <sub>R</sub>		---	---	10	μA	V <sub>R</sub> =5V

Notes:

1. Tolerance of Luminous Intensity: ±10%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage: ±0.1V
4. Reverse leakage current (I<sub>R</sub>) < 10uA are tested at reverse 5V. Reverse voltage condition is applied to I<sub>R</sub> test only.  
LED components are not supposed to be reverse operated.
5. All reliability item are tested under good thermal management. Dynamic reliability are tested at 20mA

### Bin Range of Luminous Intensity

Type	Bin Code	Min.	Max.	Unit	Condition
RQH	RA	75	90	mcd	R:I <sub>F</sub> =2.5mA G:I <sub>F</sub> =2.5mA B:I <sub>F</sub> =2.5mA
	RB	90	110		
	RC	110	130		
GS	GA	285	340		
	GB	340	410		
	GC	410	495		
BO	BA	55	66		
	BB	66	80		
	BC	80	97		

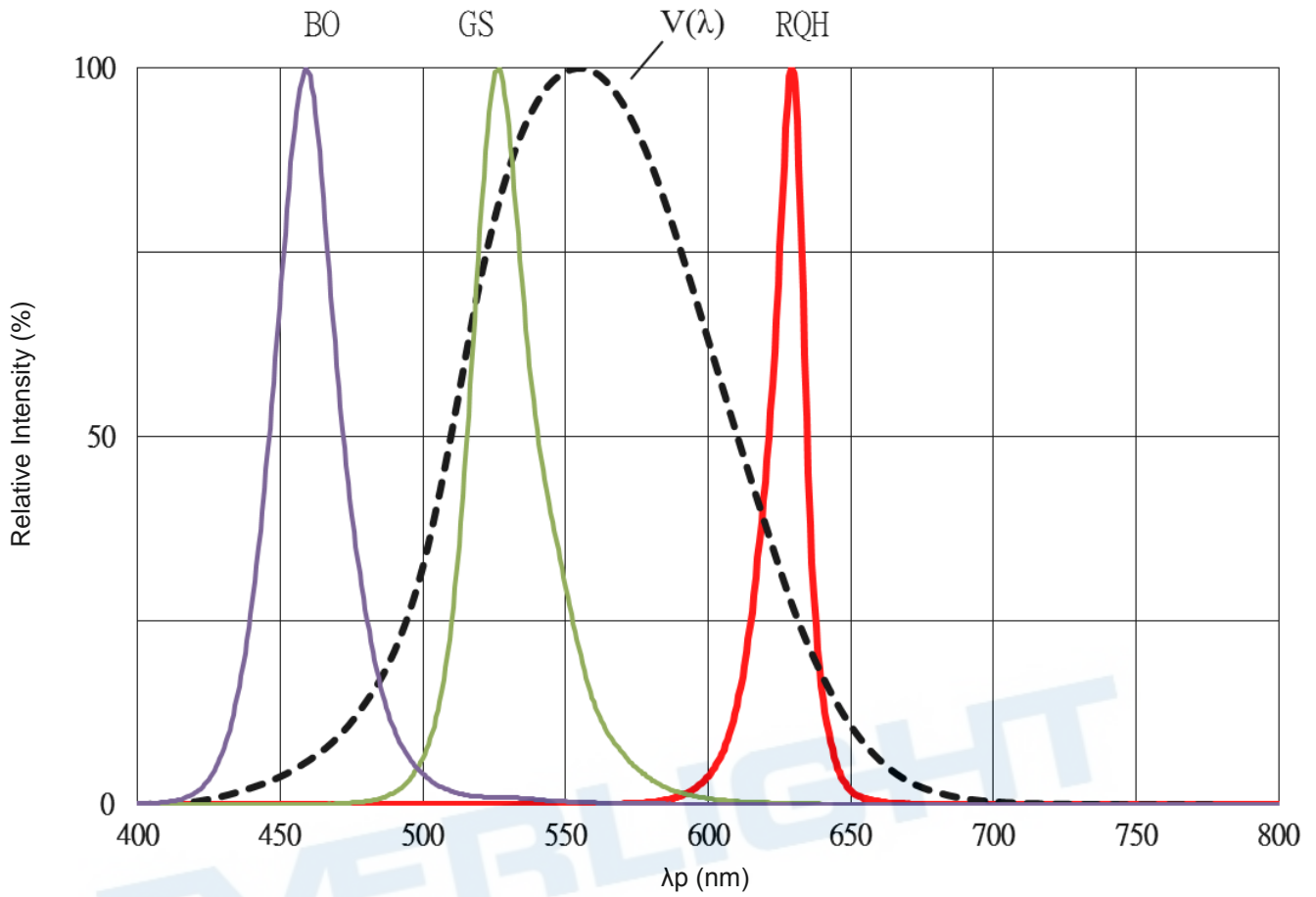
Note:  
Tolerance of Luminous Intensity: ±10%

### Bin Range of Dominant Wavelength

Chip	Bin Code	Min.	Max.	Unit	Condition
RQH	R1	617	620	nm	R:I <sub>F</sub> =2.5mA G:I <sub>F</sub> =2.5mA B:I <sub>F</sub> =2.5mA
	R2	620	623		
	R3	623	626		
GS	G1	526	529		
	G2	529	532		
	G3	532	535		
BO	B1	469	472		
	B2	472	475		
	B3	475	478		

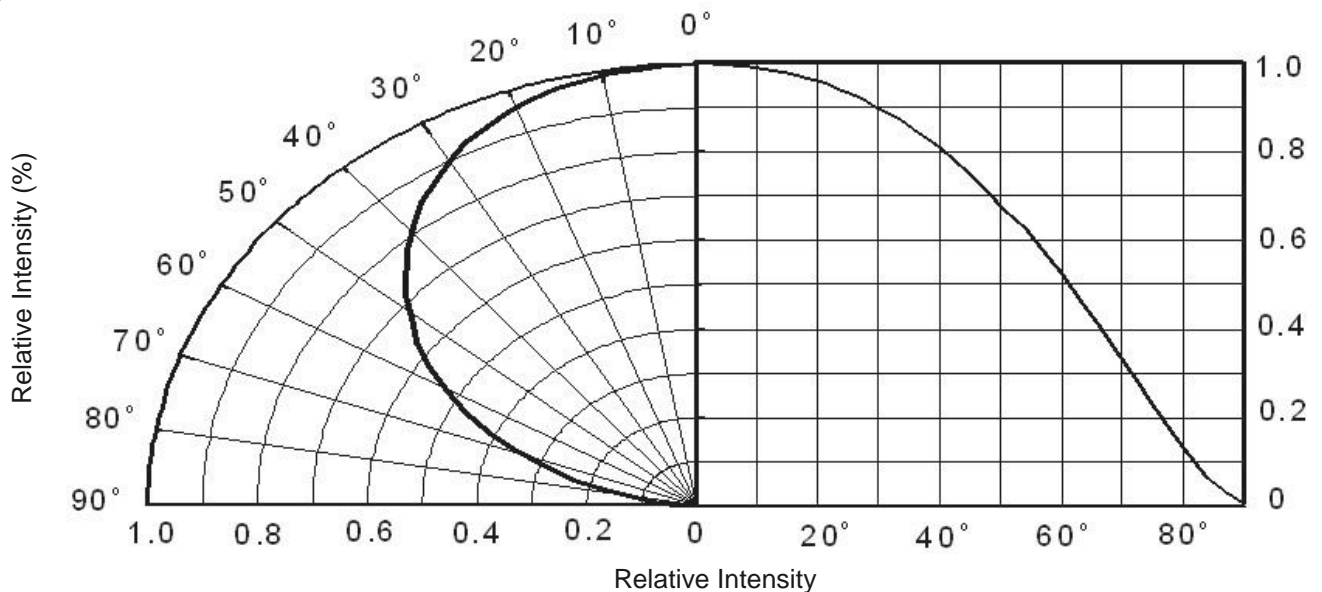
Note:  
Tolerance of Dominant Wavelength: ±1nm

**Typical Electro-Optical Characteristics Curves**  
 Typical Curve of Spectral Distribution



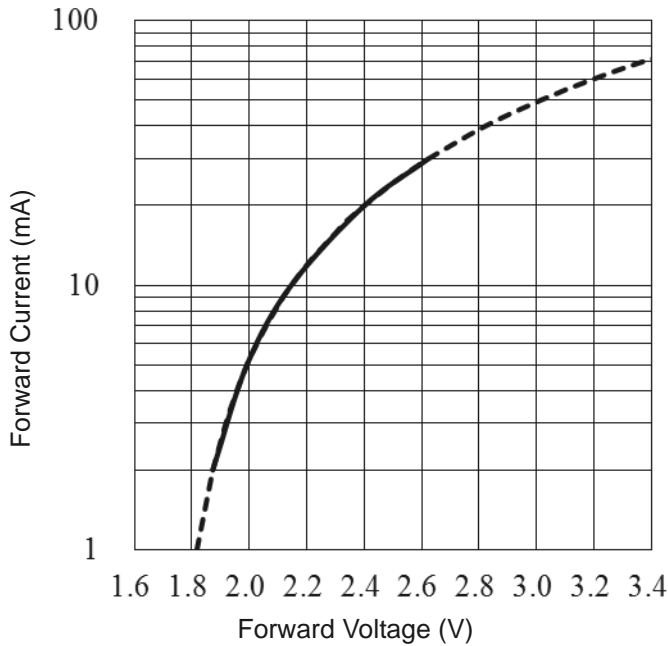
Note:  $V(\lambda)$ =Standard eye response curve

**Diagram Characteristics of Radiation**

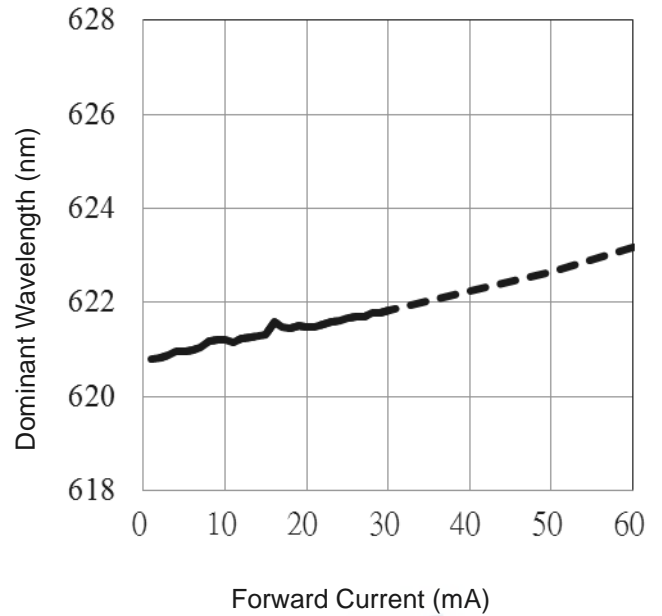


### Typical Electro-Optical Characteristics Curves (RQH)

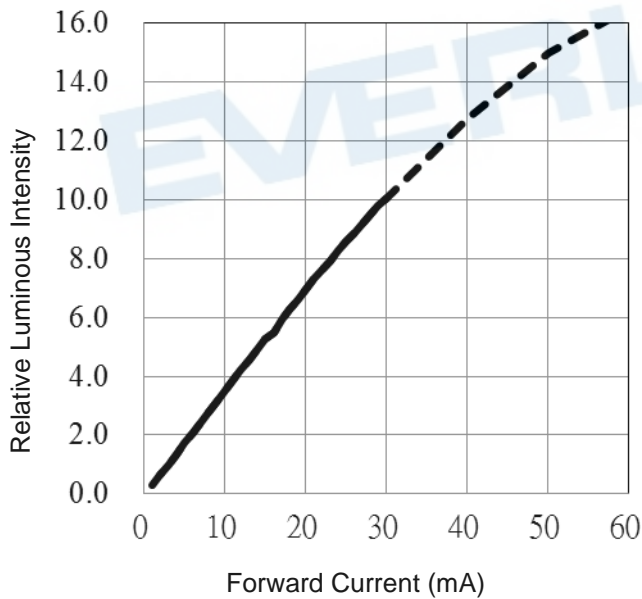
Forward Current vs. Forward Voltage (Ta=25°C)



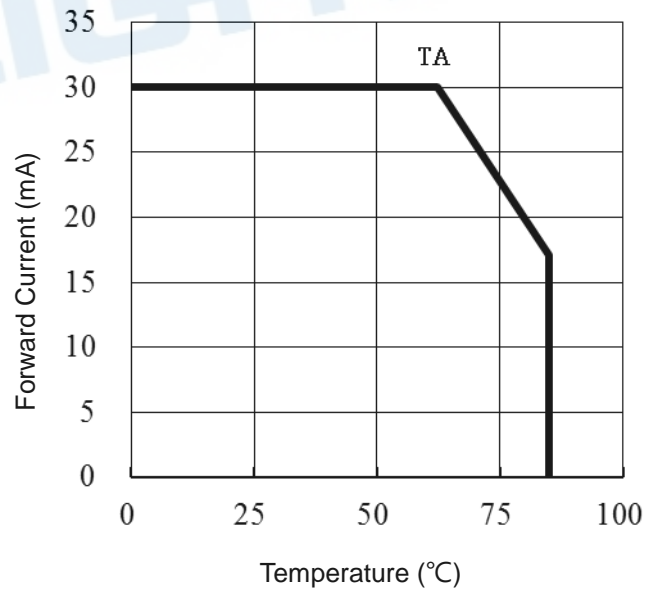
Dominant Wavelength vs. Forward Current (Ta=25°C)



Relative Luminous Intensity vs. Forward Current (Ta=25°C)

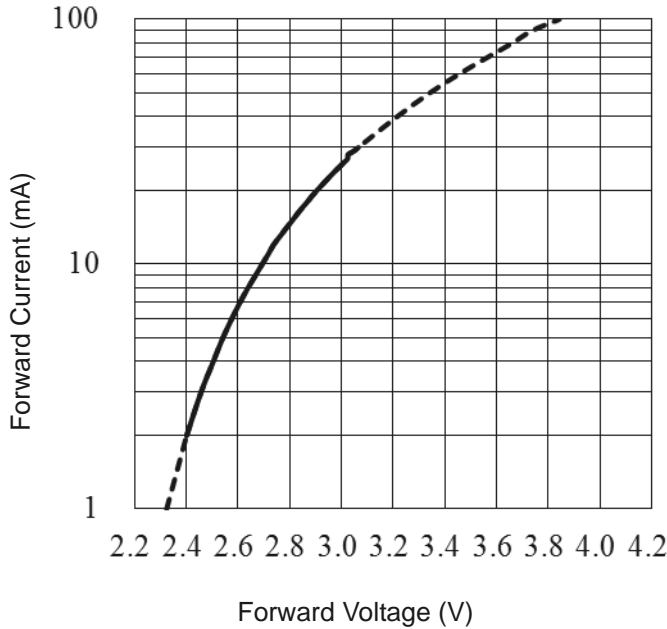


Max. Permissible Forwarded Current (Ta=25°C)

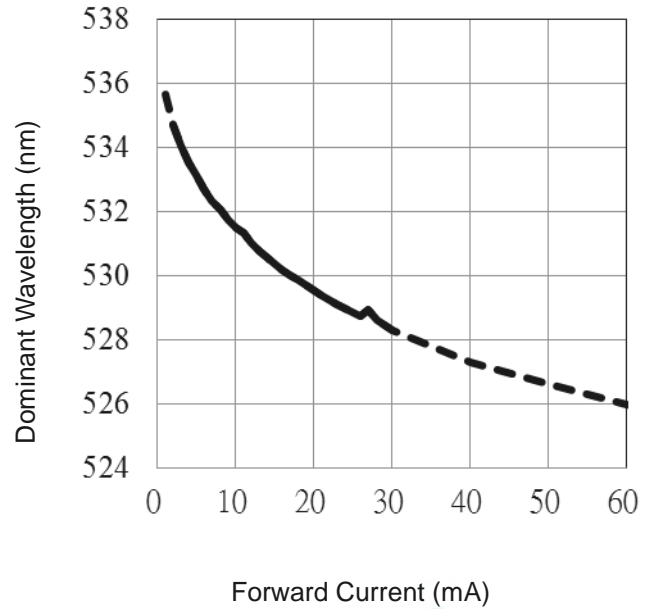


### Typical Electro-Optical Characteristics Curves (GS)

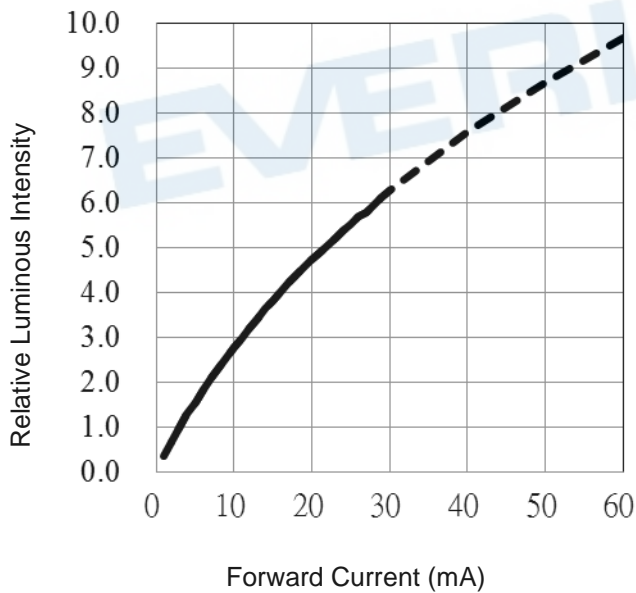
Forward Current vs. Forward Voltage (Ta=25°C)



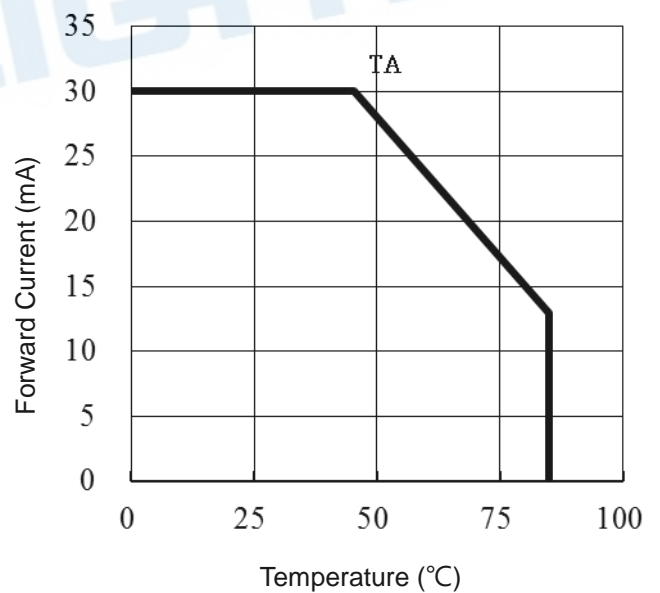
Dominant Wavelength vs. Forward Current (Ta=25°C)



Relative Luminous Intensity vs. Forward Current (Ta=25°C)

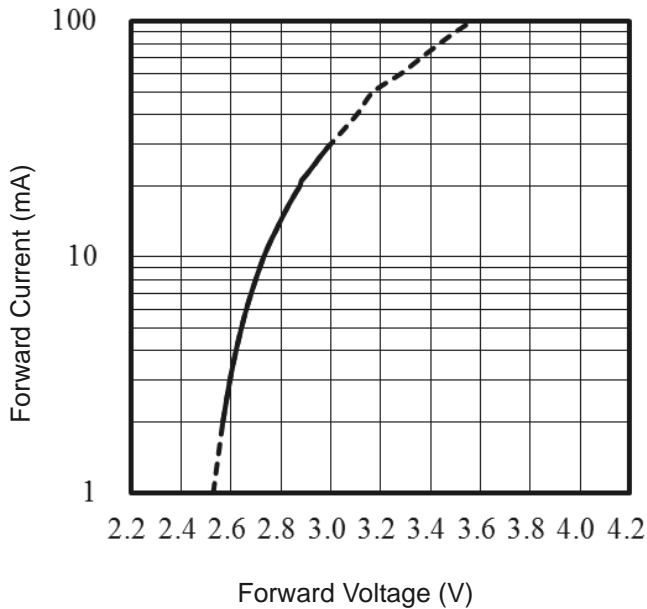


Max. Permissible Forwarded Current (Ta=25°C)

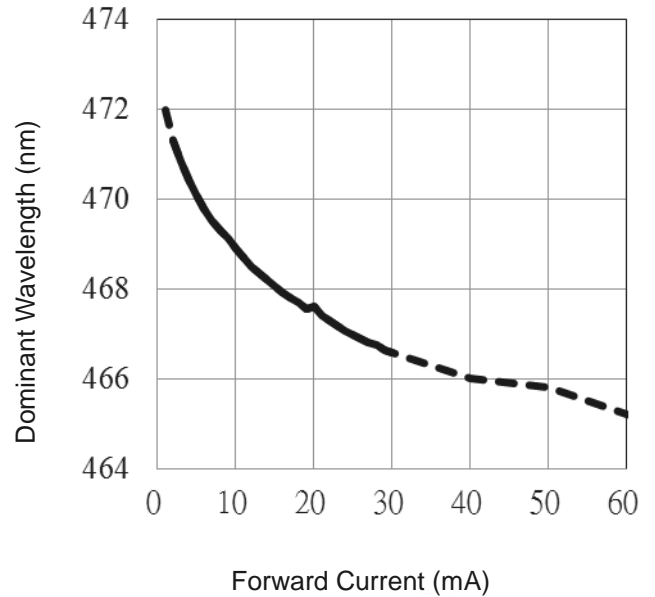


### Typical Electro-Optical Characteristics Curves (BO)

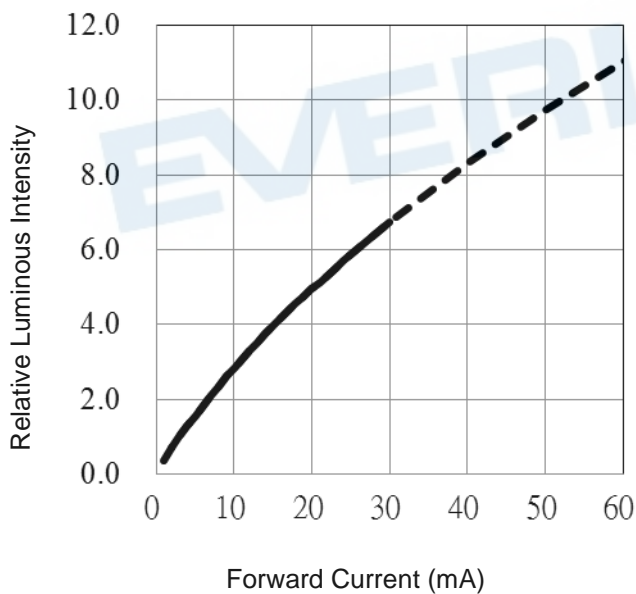
Forward Current vs. Forward Voltage (Ta=25°C)



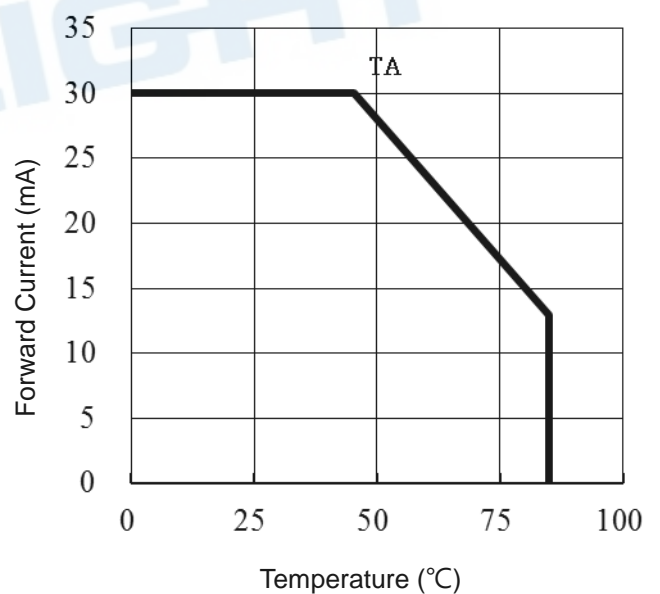
Dominant Wavelength vs. Forward Current (Ta=25°C)



Relative Luminous Intensity vs. Forward Current (Ta=25°C)

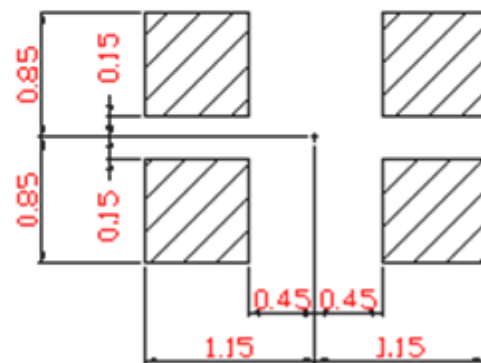
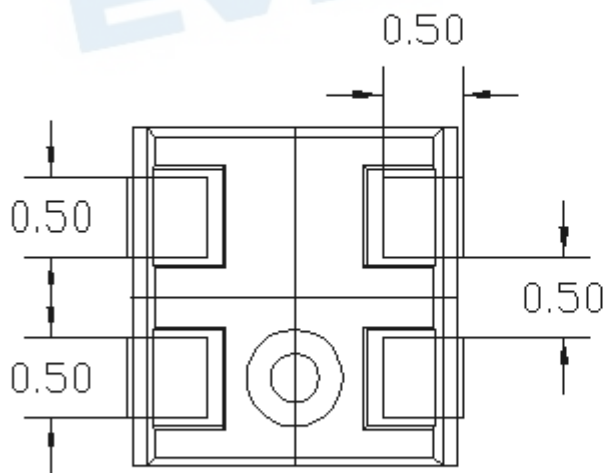
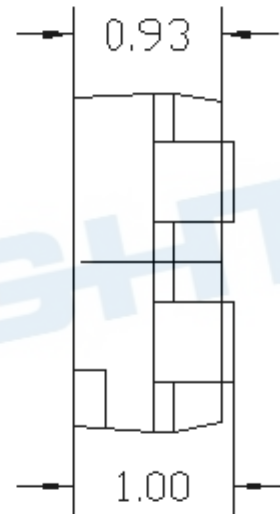
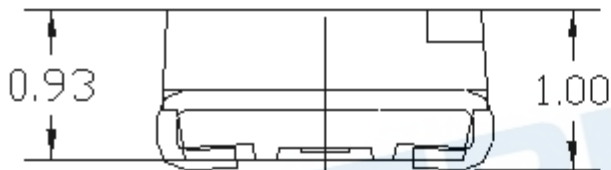
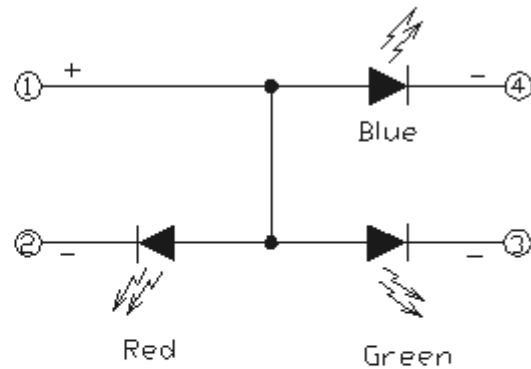
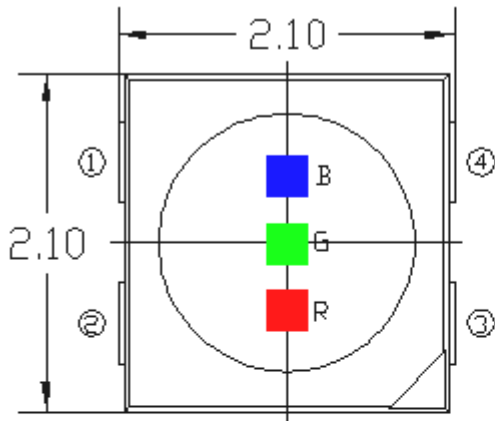


Max. Permissible Forwarded Current (Ta=25°C)





Package Dimension

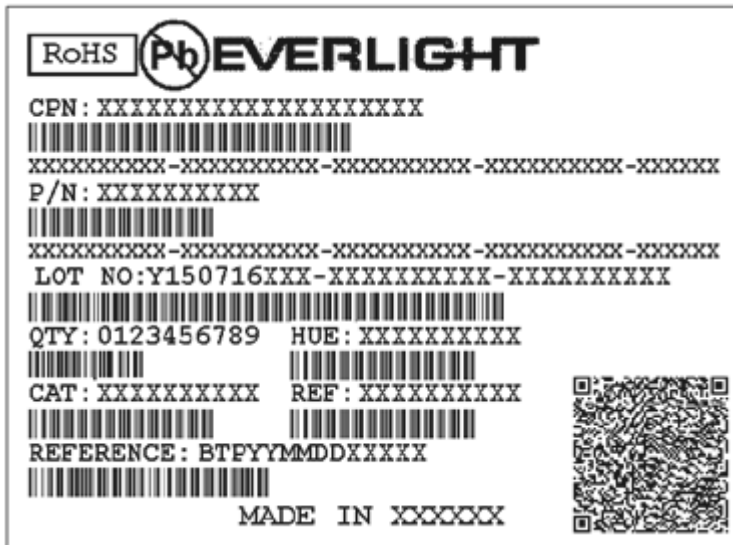


Soldering patterns

Note: Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm

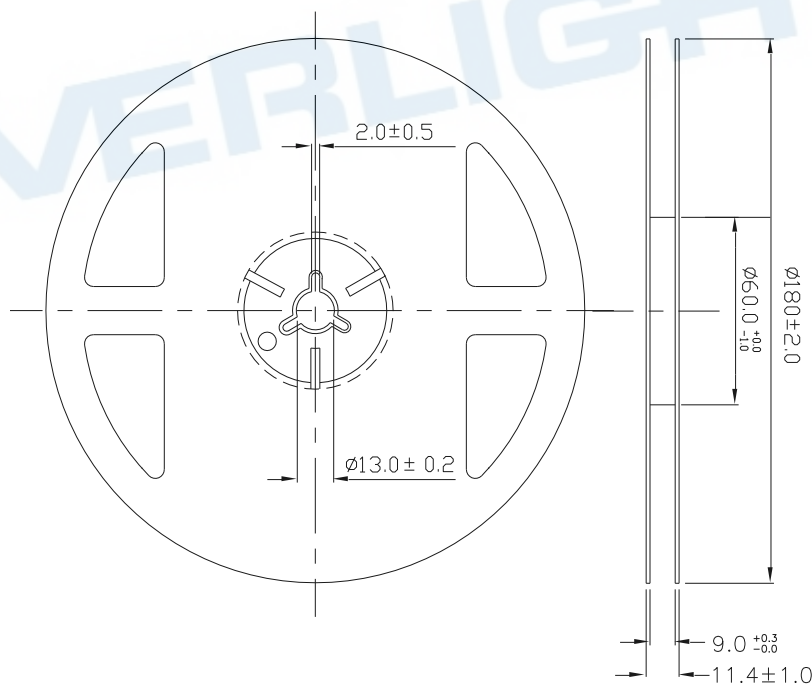
Moisture Resistant Packing Materials

Label Explanation



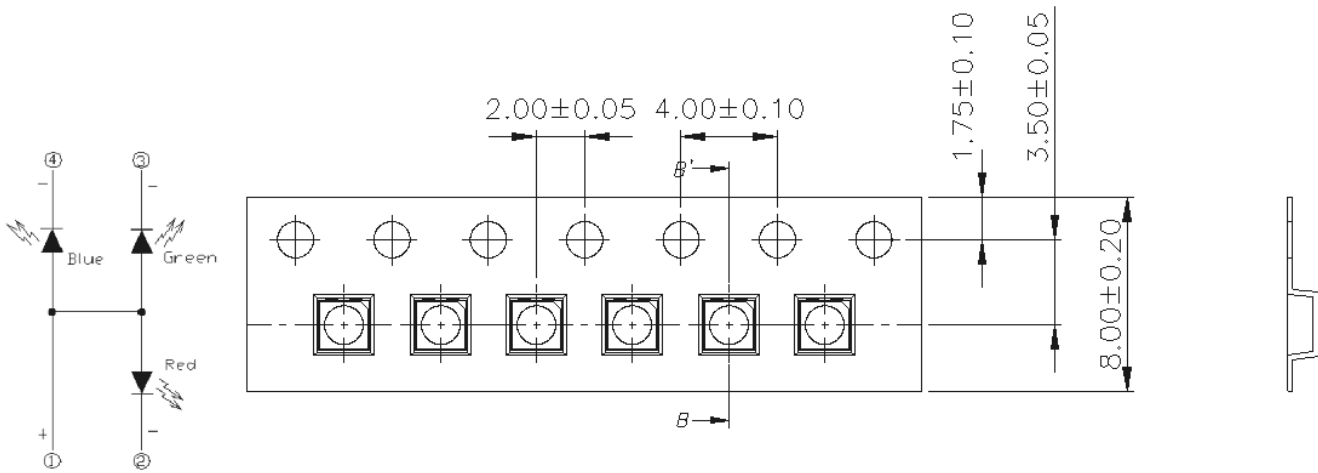
- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

Reel Dimensions



Note:  
 Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm

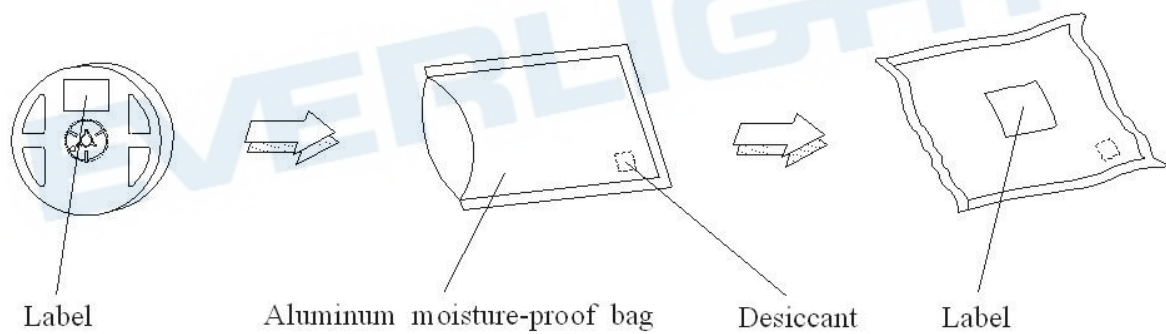
**Carrier Tape Dimensions: Loaded Quantity 3000 pcs Per Reel**



**Notes:**

1. Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm
2. Minimum packing amount is 250/500/1000/2000 pcs per reel

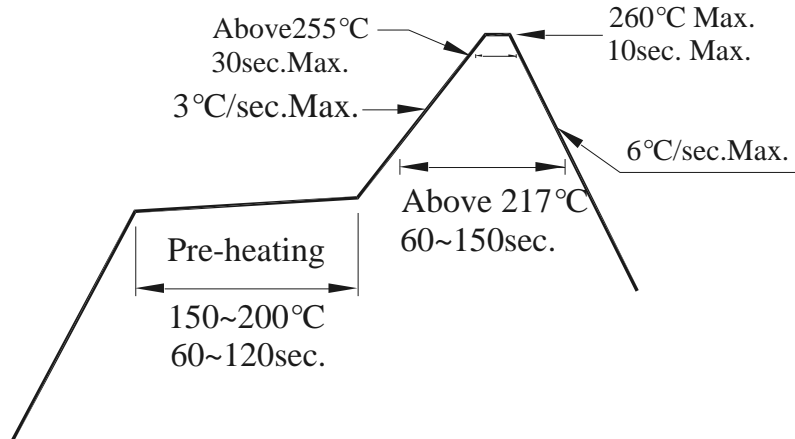
**Moisture Resistant Packing Process**



## Precautions for Use

### 1. Over-current-proof

1.1 Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change ( Burn out will happen ).



### 2. Storage

2.1 Moisture proof bag should only be opened immediately prior to usage.

2.2 Environment should be less than 30°C and 60% RH when moisture proof bag is opened.

2.3 After opening the package MSL Conditions stated on page 1 of this spec should not be exceeded.

2.4 If the moisture sensitivity card indicates higher than acceptable moisture, the component should be baked at min. 60deg +/-5deg for 24 hours.

### 3. Soldering Condition

3.1 Pb-free solder temperature profile

3.2 Reflow soldering should not be done more than two times.

3.3 When soldering, do not put stress on the LEDs during heating.

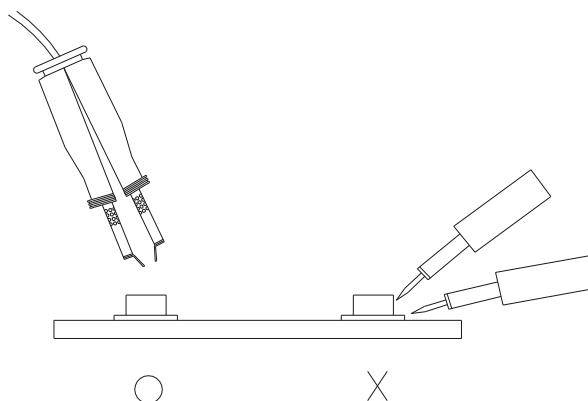
3.4 After soldering, do not warp the circuit board.

### 4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

### 5. Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.



## Application Restrictions

High reliability applications such as military/aerospace, automotive safety/security systems, and medical equipment may require different product. If you have any concerns, please contact Everlight before using this product in your application. This specification guarantees the quality and performance of the product as an individual component. Do not use this product beyond the specification described in this document.

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